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Exploring the Impact of AI-Driven Personalization on Consumer Engagement in Digital Marketing

Abstract

Research background and purpose: This study examines AI-driven impact personalization on consumer engagement within Saudi Arabia's digital marketing landscape, aligning with Vision 2030 objectives. It underscores the transformative potential of artificial intelligence in enhancing customer interaction, satisfaction, and loyalty by delivering tailored experiences that address consumer preferences. The research focuses on key factors – ethical considerations, technological readiness, organizational culture, and cost – that influence the effectiveness of AI-driven personalization, providing insights into fostering robust consumer relationships and supporting Saudi Arabia's digital transformation initiatives.

Design/methodology/approach: The study uses a descriptive-analytical approach to explore the relationship between AI-driven personalization and consumer engagement. Researchers collected data through a structured questionnaire distributed to a randomly selected sample of 350 participants and analyzed 300 valid responses. They applied statistical methods, including descriptive statistics and correlation analysis, to examine the relationships between variables. Additionally, Cronbach's alpha evaluated the reliability of the research instruments.

Findings: The study reveals a significant positive relationship between AI-driven personalization and consumer engagement. Ethical considerations, particularly data privacy and transparency (correlation coefficient = 0.81), play the most influential role by emphasizing the need for secure and transparent data practices to build trust. Organizational culture (0.75) also plays a crucial role, with innovation and professionalism strengthening consumer trust and loyalty. Technological readiness and cost further enhance engagement, as organizations leverage advanced AI technologies and strategic pricing to deliver personalized experiences. Participants appreciate the convenience, efficiency, and tangible benefits provided by these personalized services.

Value added and limitations: This study provides critical insights into the role of AI in Saudi Arabia's digital economy, emphasizing the integration of ethical standards and technological innovation to gain a competitive edge. However, reliance on self-reported data and a geographically confined sample may limit generalizability. Future research should include broader demographics and additional variables to expand these findings.

Keywords: *AI-driven personalization, consumer engagement, digital marketing, technological readiness, organizational culture*

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Classification: M30, M31, M39

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1. Introduction

With intensifying competition among organizations to meet customer needs, it has become essential for them to adopt optimal strategies to achieve this goal (Drydak, 2022). Organizations are increasingly focusing on enhancing internal performance and improving processes to gain a competitive advantage, distinguish themselves from competitors, and meet customer expectations while building sustainable relationships that contribute to satisfaction and reinforce market position (Mariani & Matarazzo, 2021).

In today's digital era, marketing strategies have shifted beyond traditional methods to deliver personalized consumer experiences. Digital marketing enhances consumer engagement through targeted interactions tailored to individual needs, fostering strong customer relationships (Norah, 2024). Artificial intelligence (AI) has emerged as a transformative tool, enabling marketers to analyze consumer behavior, preferences, and interactions across digital platforms and deliver personalized experiences (Ming-Hui & Rust, 2022). Globally, AI-driven personalization has revolutionized digital marketing, but in Saudi Arabia, its adoption is still in its early stages, presenting opportunities for development (Alqasa, 2023). The Kingdom's Vision 2030 focuses on leveraging AI and advanced technologies to drive innovation and economic growth, with companies such as STC and Noon using AI to strengthen engagement and satisfaction, aligning with the country's ambition to become a regional technology hub (Yusuf, 2023).

AI technologies, including predictive analytics, natural language processing, and machine learning, enable the analysis of vast consumer datasets to identify behavioral patterns and inform targeted marketing campaigns. These tools predict future behaviors and preferences using browsing histories, purchase records, and digital interactions. By delivering personalized recommendations and messages, businesses enhance engagement, improve satisfaction, and increase conversion rates (Babatunde et al., 2024). Studies show that personalized marketing captures consumer attention and fosters emotional connections with brands, improving loyalty and advocacy (Gkikas & Theodoridis, 2022).

Despite its advantages, AI-driven personalization raises ethical concerns. The reliance on consumer data introduces challenges related to privacy, security, and transparency. As consumers become more aware of how their data is collected and used, they demand greater control and accountability. Excessive personalization may lead to perceptions of intrusiveness, eroding trust and negatively affecting the consumer experience. Organizations must balance leveraging AI for personalization with respecting privacy. Adhering to data protection standards, such as the General Data Protection Regulation (GDPR), while promoting transparency in AI practices, is essential for fostering trust and ethical AI applications (Franke et al., 2024).

1.1. Study problem

Despite global advancements in digital personalization, Saudi companies continue to rely on limited AI-driven personalization, thereby constraining their competitiveness in an increasingly digitized market. With Vision 2030 emphasizing digital transformation and innovation, questions arise regarding the extent to which Saudi companies are prepared to meet evolving consumer expectations. Moreover, the adoption of personalization faces ethical challenges – encompassing privacy, transparency, technological readiness, organizational culture, and the cost of AI deployment – that may hinder its effective implementation. Accordingly, this study addresses the following question: What is the impact of AI-driven personalization on consumer engagement in digital marketing?

1.2. Study Importance

This study aims to evaluate the adoption level of AI-driven personalization in the Saudi market, highlighting its current state and identifying areas for improvement. It also seeks to explore the factors influencing consumer adoption of personalization, such as privacy, transparency, technological readiness, organizational culture, and associated costs, with a focus on ethical implementation. Furthermore, the study will offer practical recommendations to help Saudi companies effectively adopt AI-driven personalization in alignment with Vision 2030, fostering innovation and enhancing customer satisfaction in the evolving digital landscape.

1.3. Study Objectives

This study aims to examine the impact of AI-driven personalization on consumer engagement, focusing on its role in enhancing interactions between consumers and companies. It also seeks to evaluate the influence of technological readiness in effectively meeting evolving consumer expectations and delivering tailored digital experiences. Moreover, the study investigates the various dimensions of the research and their collective impact on consumer interactions with AI technologies used by companies, offering a comprehensive understanding of the factors shaping these interactions.

1.4. Study Hypotheses

- H1: There is a statistically significant relationship between the adoption of AI-driven personalization and consumer engagement in Saudi Arabia.
- H2: There is a statistically significant relationship between technological readiness for adopting AI and consumer engagement in Saudi Arabia.

- H3: There is a statistically significant relationship between organizational culture associated with AI and consumer engagement in Saudi Arabia.
- H4: There is a statistically significant relationship between ethical considerations related to AI, such as data privacy and transparency, and consumer engagement in Saudi Arabia.
- H5: There is a statistically significant relationship between the cost of adopting AI-driven personalization and consumer engagement in Saudi Arabia.

2. Theoretical Framework and Previous Studies

AI-driven personalization considered a transformative strategy in digital marketing, offering innovative solutions to enhance customer engagement through tailored experiences. Artificial Intelligence (AI) is defined as a field focused on developing systems capable of simulating human intelligence in learning, reasoning, and decision-making (Pawlicka & Bal, 2022). According to Hwang and Chien (2022), AI aims to understand human intelligence and create tools enabling computers to process large datasets and manage complex scenarios, providing effective solutions across sectors. Personalization, as defined by Raji et al. (2024), is the process of adapting products, services, or content to meet targeted customer preferences, improving satisfaction and fostering engagement. Chandra et al. (2022) highlight that personalization allows organizations to deliver unique experiences to each customer, strengthening relationships and building greater trust in the brand. Studies (Rosário et al., 2023; Liu et al., 2024) underscore the significant role of AI-driven personalization in improving satisfaction and enhancing loyalty. These technologies also address cultural and regional differences, fostering long-term engagement with customers. Abdelfattah et al. (2024) conducted a study exploring the application of AI tools, such as dynamic pricing and chatbots, and their transformative impact on customer interactions with brands. The study emphasized how these tools improve customer engagement by providing tailored solutions addressing individual needs. As a result, businesses enhance overall customer experiences and gain a competitive advantage. Despite the immense potential of AI-driven personalization, organizations face challenges in scaling these technologies across industries and adapting to changing customer preferences. This highlights the need for further research to develop effective strategies and mechanisms facilitating the adoption of smart personalization, maximizing its potential in enhancing customer engagement and supporting digital marketing strategies.

Technological readiness is a critical factor in determining an organization's ability to adopt advanced technologies, such as artificial intelligence (AI), and leverage them to enhance customer experience and interaction. It refers to the preparedness

level of an organization, encompassing digital infrastructure, qualified human resources, and organizational systems required to support technology integration into operations (Mikalef et al., 2023). According to Webster and Gardner (2019), technological readiness enables organizations to adopt innovations efficiently and strengthen relationships with customers by delivering tailored services that meet their needs. Organizations with high technological readiness better positioned to utilize technology to improve customer experience. For instance, Martínez et al. (2021) highlight that advanced technological infrastructure enhances communication with customers and provides efficient, personalized services. Similarly, Tambe and Yakubovich (2019) emphasize that developing human resources capable of utilizing AI strengthens an organization's ability to analyze customer data and design experiences that boost satisfaction and loyalty. Abedi and Mohammadzadeh (2024) underscore the pivotal role of technological readiness in AI-driven personalization, including investments in infrastructure and workforce development, enabling organizations to utilize AI tools effectively, such as customer relationship management (CRM) systems. Such readiness enhances processes and improves personalized services, increasing satisfaction and loyalty. However, small organizations and those in developing economies face challenges in meeting technological system requirements. Haghghinasab et al. (2024) highlight insufficient readiness as a critical obstacle, restricting organizations from delivering personalized services, leading to weaker customer interactions and reduced loyalty. Similarly, Aydin et al. (2022) emphasize that inadequate technological and human resources hinder customer experiences and limit the benefits of services.

Organizational culture plays a significant role in shaping institutional identity, influencing employee behavior, and determining customer interaction quality. It refers to the shared values, norms, and practices within an organization that guide internal and external interactions. A strong culture drives collaboration, innovation, and customer-centricity, fostering an environment where employees and customers thrive. According to Ndlela (2024), communication is vital to organizational culture, influencing how institutions adapt to external demands. Companies with a customer-focused culture foster trust, satisfaction, and loyalty. The adoption of advanced technologies, particularly AI, depends on cultural readiness, openness to innovation, and adaptability. Flexible and innovation-driven cultures provide a foundation for successful AI integration, improving operational efficiency and customer experiences. Kathuria and Rana (2023) found that emphasizing digital innovation and maintaining a customer-focused culture enhances AI integration, leading to improved services and satisfaction. Abonamah and Abdelhamid (2024) revealed that adaptive cultures had better utilize AI tools, especially in high-pressure environments, fostering effective customer engagements. Saghafian and Laumann (2021) addressed barriers to technology adoption, highlighting that rigid cultures hinder AI implementation.

They concluded that fostering values such as transparency, collaboration, and trust is critical to overcoming resistance and maximizing AI benefits. Chijere (2024) stressed collaborative practices promoting AI integration into customer service. Similarly, Gupta and Khan (2022) demonstrated that supportive, innovation-driven cultures achieve better AI outcomes, including improved satisfaction and efficiency. Ethical considerations have become critical with AI's rapid advancement, necessitating attention to ensure responsible and fair implementation. These considerations include data privacy and transparency, which directly affect customer trust and engagement. Bannister and Connolly (2022) emphasize transparency in AI systems as essential for building trust, enabling stakeholders to understand and validate AI decisions. Regulatory frameworks ensuring transparency and data protection enhance customer confidence in these technologies. Ethical AI principles guide design and application to align with values like fairness, accountability, and transparency (Díaz et al., 2023). Adhering to these principles builds trust and fosters engagement. Data privacy involves individuals' rights to control personal information, ensuring it not used without consent. Wei and Liu (2025) highlights integrating robust data protections into AI systems for secure, responsible usage, enhancing satisfaction. Transparency in AI frameworks enables users to evaluate operations, fostering trust (Basri, 2020). Studies link ethical AI considerations to engagement, showing that frameworks for transparency and privacy build trust. Coeckelbergh (2020) found transparency in AI systems influences trust and satisfaction. Floridi and Cowls (2019) emphasized embedding principles like fairness and bias prevention strengthens customer relationships. Hagendorff (2020) recommended ethical AI policies emphasizing accountability and transparency to build trust.

The costs of implementing AI technologies pose significant challenges across various sectors. These costs include initial development, operational management, and maintenance expenses, which are essential for the successful adoption of AI, particularly in enhancing engagement and user experience. AI costs encompass design, research, specialized software, and training. Gao and Liu (2023) suggested that these costs create substantial challenges for small and medium enterprises. Operational costs, as defined by Balasubramanian (2024), include system operations, energy consumption, and periodic updates. Investments in these areas help maintain efficiency and ensure the quality of services. Bhima and Firli (2023) found that organizations investing in AI improve customer satisfaction by delivering innovative and efficient services. Shaikh and Cruz (2023) highlighted that high initial costs remain a significant barrier for small businesses. Felzmann et al. (2020) emphasized that robust infrastructure and effective cost management enhance customer engagement and loyalty. Customer engagement is fundamental to building long-term relationships with customers, fostering loyalty, trust, and advocacy. AI has revolutionized engagement strategies by leveraging predictive analytics, chatbots, and personalized recommendations, enabling

businesses to strengthen customer connections (Rane, 2023). AI processes large datasets in real time, providing insights into customer behavior and preferences, which helps businesses, anticipate their needs (Supriyanto & Burhanuddin, 2021). Engagement defined as “the process of interacting with customers through meaningful experiences across touchpoints to build loyalty and satisfaction” (Perez et al., 2021). Integrating AI into engagement strategies aligns with this definition, enabling hyper-personalized experiences and fostering trust (Hollebeek et al., 2021), effectively optimizing strategies and enhancing customer engagement.

2.1. Study Gap

This study focuses on Saudi Arabia, in contrast to many previous studies that have examined the global impact of AI-driven personalization in digital marketing. It highlights the gap in adopting this approach within local Saudi companies, emphasizing five key dimensions: AI-driven personalization, technological readiness, organizational culture from the customers’ perspective, implementation costs, and the specific needs of the Saudi market, in alignment with the Kingdom’s Vision 2030.

3. Methodology

This research adopted a mixed-methods approach, combining theoretical and practical insights to examine the impact of AI-driven personalization on consumer engagement. Despite rapid global advancements in AI-driven personalization, Saudi companies face significant challenges in fully adopting these technologies, which undermines their competitiveness in an increasingly digitalized market. With Vision 2030 emphasizing innovation and digital transformation, there is an urgent need to explore effective implementation strategies to meet evolving consumer expectations. Data collected through a structured questionnaire and analyzed using advanced statistical techniques, as detailed below.

3.1. Mixed-Methods Approach

The study employed mixed methods approach as following:

- the study relied on various sources of information, divided from previous studies and academic references, both Arabic and English, to support the theoretical framework of the study and forming the study hypothesis according to the previous gaps,
- a questionnaire designed to meet the study purposes by collecting data from the selected sample. While, the collected data analysis used to derive the results of examining the hypothesis.

3.2. Questionnaire Design and Pilot Study

A structured questionnaire created to collect primary data aligning with the research problem and hypotheses. It examined both independent variables (AI-driven personalization, technological readiness, organizational culture, ethical considerations, and cost) and the dependent variable (consumer engagement).

Prior to large-scale distribution, a Pilot study conducted on a small sample to refine questionnaire items and ensure clarity. Feedback from this pilot prompted minor adjustments, improving the questionnaire's reliability and validity.

3.3. Study Population and Sampling

The target population included customers of Saudi companies using AI tools for marketing services between 2023 and 2024. Prominent firms such as NOON and STC were included, aligning with the Kingdom's Vision 2030 digital transformation initiatives.

A random sampling method was utilized to ensure fair representation. Paper-based questionnaires distributed to 350 customers, with 300 valid responses retained after excluding invalid submissions. This methodology yielded a robust dataset reflecting customer experiences and perceptions.

3.4. Research Instrument and Reliability

A five-point Likert scale (1 = strongly disagree to 5 = strongly agree) was employed to capture respondents' views. Cronbach's Alpha was computed for each primary domain, confirming high internal consistency and reliability.

3.5. Statistical Methods

The study employed advanced statistical methods to analyze data and test hypotheses using SPSS (Statistical Package for the Social Sciences). Validity and reliability assessed using Cronbach's Alpha to ensure the measurement tools' consistency. Descriptive statistics, including frequency distributions, means, and standard deviations, used to analyze demographic data and describe the sample's characteristics. Correlation analysis conducted to measure the strength and direction of relationships between independent and dependent variables, while simple regression analysis determined the impact of independent variables on the dependent variable, consumer engagement. These statistical methods ensured the accuracy and scientific interpretation of results,

providing strong quantitative evidence to support the study's hypotheses and achieve its research objectives.

3.6. Study Model

The study considered the following model to proceed in analysis steps to test the hypothesis including the independent and dependent variables. See Figure 1 below.

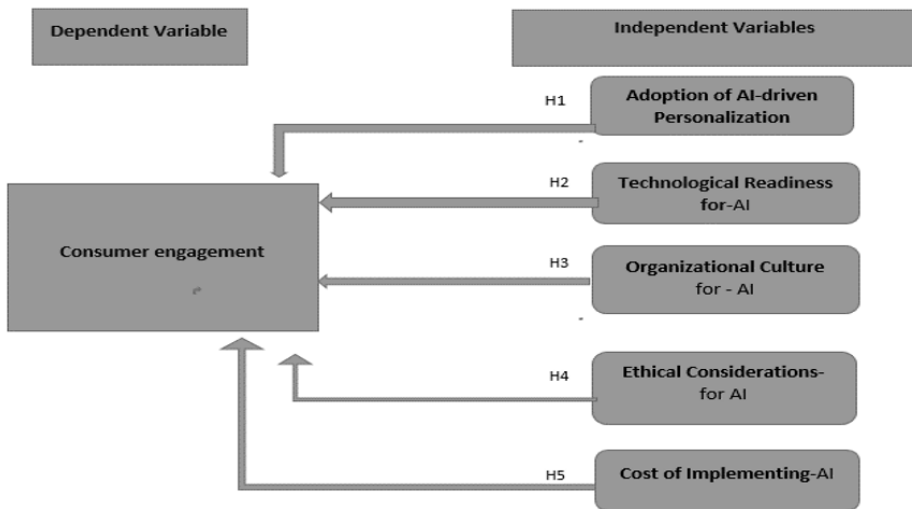


Figure 1. Study model

Source: own study

3.7. Data Analysis

3.7.1. The Demographic Analysis

According to the SPSS software, the collected data analyzed. The following table illustrates the results of demographics variables. See Table 1.

Table 1. Analysis of Demographics Variables

Domain	Category	Frequency	Percentage
Gender	Male	172	57.3%
	Female	128	42.7%
	Total	300	100%
Age	Below 20	33	11%
	21-30	109	36.33%
	31-40	88	29.33%
	Above 40	70	23.33%
	Total	300	100
Marital Status	Single	115	38.33%
	Married	145	48.33%
	other	40	13.33%
	Total	300	100%
Educational Level	High School	41	13.7%
	Bachelor's	84	28%
	Master's	90	30%
	PhD	85	28.3%
	Total	300	100%
Income (SAR)	<5000	45	15%
	5000-10000	58	19.33%
	10001-20000	103	34.33%
	Above 20000	94	31.33%
	Total	300	100%
company	STC	182	60.7%
	NOON	118	39.3%
	Total	300	100%

Source: own study

The demographic analysis of the sample shows that 57.3% of the participants are male and 42.7% are female. The 31-40 age group at 29.33% between 21-30 years, comprising 36.33%, follows the largest age group. Regarding marital status, 48.33% are married, while 38.33% are single. In terms of educational level, 30% hold a Master's degree and 28.3% hold a PhD. The largest income group falls within the range of 10,001-20,000 SAR (34.33%), followed by the 5,000-10,000 SAR range (19.33%). Furthermore, 60.7% of participants work at STC, and 39.3% at NOON.

3.7.2. The Cronbach's Alpha Analysis

The major domains of the study analyzed. The following table illustrates the results of Cronbach's Alpha. See Table 2.

Table 2. **Cronbach's Alpha analysis**

Domain	Cronbach's Alpha	Relationship
Adoption of AI-driven Personalization	0.88	Excellent
Technological Readiness	0.84	Excellent
Organizational Culture	0.86	Excellent
Ethical Considerations	0.87	Excellent
Cost of Implementing AI-driven Personalization	0.85	Excellent
Consumer Engagement	0.86	Excellent

Source: own study

Table 2 The Cronbach's Alpha results (0.84–0.88) indicate a high level of reliability across the studied domains, including AI-driven personalization and customer engagement. These findings confirm the internal consistency of the survey and its effectiveness in accurately measuring the constructs while providing insights into the impact of personalization on customer satisfaction and engagement.

3.7.3. The Correlation Analysis

The results of correlations presented as following. See Table 3.

Table 3. Correlation Analysis

Domain/ Variables	Correlation Coefficient
Adoption of AI-driven Personalization	0.72
Technological Readiness	0.68
Organizational Culture	0.75
Ethical Considerations	0.81
Cost of Implementing AI-driven Personalization	0.63
Consumer Engagement	0.77

Source: own study

Table 3 displays the correlation analysis results indicate strong positive relationships among the key variables, with values ranging from 0.63 to 0.81. Ethical considerations (0.81) exhibit a significant impact on customer trust, while technological readiness (0.68) and organizational culture (0.75) show substantial associations with customer engagement. These findings highlight the importance of the study's dimensions in enhancing customer experience and achieving desired objectives.

3.7.4. The Regression Analysis

The results of regression analysis presented as following. See Table 4.

Table 4. Regression Analysis

Regression Type	Dependent Variable	Independent Variable	R ²	p-value
Simple Regression	Consumer Engagement	Adoption of AI-driven Personalization	0.72	< 0.001
Simple Regression	Consumer Engagement	Technological Readiness	0.68	< 0.001
Simple Regression	Consumer Engagement	Organizational Culture	0.75	< 0.001
Simple Regression	Consumer Engagement	Ethical Considerations	0.81	< 0.001
Simple Regression	Consumer Engagement	Cost of Implementing AI-driven Personalization	0.77	< 0.001

Source: own study

Table 4 regression analysis results demonstrate that all independent variables significantly influence “Consumer Engagement,” with strong statistical significance (p -value < 0.001). Among these, “Ethical Considerations” exhibited the highest effect ($R^2 = 0.81$), followed by “Organizational Culture” ($R^2 = 0.75$), emphasizing their pivotal role in driving engagement. Additionally, “Adoption of AI-driven Personalization” showed a considerable impact ($R^2 = 0.72$), alongside “Cost of Personalization” ($R^2 = 0.77$) and “Technological Readiness” ($R^2 = 0.68$). These results underscore the critical importance of these factors in shaping consumer engagement with artificial intelligence.

3.7.5. The Adoption of AI-driven Personalization Analysis

The results of Adoption of AI-driven Personalization presented as following. See Table 5.

Table 5. Analysis of Adoption of AI-driven Personalization

Domain	Question	Mean	Std.Dev
Adoption of AI-driven Personalization	AI-driven personalization improves my shopping experience.	3.91	0.64
	I frequently use services or products that rely on AI-driven personalization.	3.84	0.70
	I feel more connected to brands that use AI-driven personalization.	3.89	0.66
	AI-driven personalization is very important when choosing a service or product	3.88	0.65
	AI-driven personalization saves me time and effort in decision-making.	3.93	0.67
	Total	3.89	0.66

Source: own study

According to Table 5, participants generally expressed positive satisfaction with AI-driven personalization, as all questions recorded high mean scores ranging from 3.84 to 3.93. This shows the technology enhances user experiences, saves time, and strengthens consumer-brand connections. However, the lowest mean score (3.84), linked to using AI-driven personalized services, highlights an opportunity to improve adoption and awareness. Conversely, the highest mean score (3.93), tied to saving time, underscores the significance of practical benefits as the most appealing aspects for consumers.

3.7.6. The Technological Readiness for Adopting AI Analysis

The results of Technological Readiness for Adopting AI analysis given as following. See Table 6.

Table 6. Analysis of Technological Readiness for Adopting AI

Domain	Question	Mean	Std.Dev
Technological readiness for adopting AI	I feel confident in my ability to use the technologies offered by the organization I deal with, such as AI-driven personalization.	3.79	0.69
	I have sufficient knowledge about the organization's use of AI-driven personalization technologies.	3.75	0.65
	I believe the organization I deal with provides me with information in an innovative way using AI technologies.	3.88	0.71
	I feel that the organization I deal with offers advanced solutions based on AI to improve its services.	3.88	0.67
	I think the organization's use of AI technologies makes its services easier and faster for me.	3.82	0.67
	Total	3.82	0.68

Source: own study

Table 6. The highlight participants' perceptions of technological readiness for adopting AI technologies, with an overall mean score of 3.82. The highest mean score (3.88) reflects participants' recognition of innovative AI applications in improving services, demonstrating organizations' forward-looking approach. Conversely, the lowest mean score (3.75) indicates participants' limited knowledge of AI-driven personalization technologies, emphasizing the need to enhance communication and provide better awareness for users.

3.7.7. The Organizational Culture with AI Analysis

The results of Organizational Culture with AI analysis presented as follows. See Table 7.

Table 7. Analysis of Organizational Culture with AI According to customer

Domain	Question	Mean	Std.Dev
Organizational Culture with AI	Companies that integrate AI into their innovative organizational culture capture my interest more effectively.	3.81	0.58
	Companies that utilize AI technologies to enhance customer satisfaction strengthen my loyalty to them.	3.92	0.61
	A company's transparent and professional use of AI positively influence my willingness to engage with them.	3.90	0.64
	Investing an AI technologies to improve services enhance my experience as a consumer.	3.93	0.59
	A company's commitment to use AI for social responsibility increases my trust and engagement with them.	3.86	0.63
	Total	3.88	0.61

Source: own study

The data in Table 7 highlights positive perceptions among customers who interact with the organization and are aware of its culture in utilizing AI. Mean scores ranged from 3.81 to 3.93, with an overall mean of 3.88, reflecting general satisfaction with the integration of AI into organizational practices. The statement that investing in AI enhances the customer experience recorded the highest mean score (3.93), underscoring its pivotal role in improving service quality. Similarly, statements related to AI's contribution to improving customer satisfaction (3.92) and its transparency (3.90) also received high scores, emphasizing the importance of these technologies in building trust and fostering loyalty. These findings indicate that customers aspire for AI to play a significant role in shaping organizational culture.

3.7.8. The Ethical Considerations Related to AI Analysis

The results of Ethical Considerations Related to AI analysis given as following. See Table 8.

Table 8. Analysis of Ethical Considerations Related to AI

Domain	Question	Mean	Std.Dev
Ethical Considerations (Data Privacy and Transparency)	Data privacy is important to me when using AI-driven personalized services.	3.93	0.66
	I trust companies to be transparent about how they use my data in AI-driven personalization.	3.80	0.66
	I prefer companies to seek my explicit consent before using my data for AI-driven services.	3.92	0.64
	I am satisfied with the level of transparency applied in AI-driven personalization provided by companies.	3.86	0.65
	I believe companies prioritize ethical considerations in AI-driven personalization.	3.93	0.65
	Total	3.89	0.65

Source: own study

Based on the analysis of Table 8, participants demonstrated significant concern regarding the ethical use of AI by companies, particularly in relation to data privacy and transparency. The highest mean score (3.93) was associated with data privacy, emphasizing the importance of ethical practices to customers, while the lowest mean score (3.80) highlighted a lack of trust in companies' transparency regarding data usage. The overall mean score (3.89) reflects a generally positive perception of ethical considerations; however, it underscores the necessity for companies to enhance transparency and build trust to improve customer experience and engagement with AI-driven services.

3.7.9. The Cost of Implementing AI-driven Personalization Analysis

The results of Cost of Implementing AI-driven Personalization analysis given as following. See Table 9.

Table 9. Analysis of Cost of Implementing AI-driven Personalization

Domain	Question	Mean	Std.Dev
Cost of Implementing AI-driven Personalization	The costs of AI-personalized products or services are reasonable.	3.92	0.62
	Higher costs for AI-personalized products or services are worth their value due to the benefits they provide.	3.89	0.58
	I am willing to pay more for AI-personalized products or services.	3.88	0.57
	The benefits I receive from AI-personalized products or services outweigh the additional costs.	3.88	0.58
	I believe there are opportunities to improve the costs of AI-personalized products or services.	3.83	0.60
	Total	3.88	0.59

Source: own study

Based on the analysis of Table 8, participants expressed significant concern regarding the ethical use of AI by companies, particularly in data privacy and transparency. The highest mean score (3.93) was tied to data privacy, emphasizing the importance of ethical practices, while the lowest score (3.80) highlighted a lack of trust in companies' transparency regarding data usage. The overall mean score (3.89) reflects a generally positive perception of ethical considerations but underscores the need for companies to enhance transparency and build trust to improve customer experience and engagement with AI-driven services.

3.7.10. The Consumer Engagement Analysis

The results of Consumer Engagement analysis given as following. See Table 10.

Table 10. Analysis of Consumer Engagement

Domain	Question	Mean	Std. Dev
Consumer Engagement	I feel that using AI-personalized services enhances my engagement as a consumer with the organization and its products.	3.68	0.57
	AI-personalized services make my engagement with the organization more valuable and effective.	3.91	0.65
	I see that AI-personalized services make my experience as a consumer more connected to the organization's products and services.	3.89	0.64
	I recommend AI-personalized services to others because they improve consumer engagement with the organization and its products.	3.93	0.64
	I see that consumer engagement with the organization increases when AI-personalized services provided.	3.83	0.67
	I am satisfied with the level of personalization provided by AI-personalized services to improve consumer engagement with the organization's products.	3.90	0.62
	AI-personalized services enhance my engagement as a consumer with the organization and increase my loyalty to its products.	3.85	0.65
	Total	3.85	0.64

Source: own study

According to Table 10, participants expressed a generally positive perception of the role of AI-driven personalized services in enhancing consumer engagement. Mean scores ranged from 3.68 to 3.93, with the highest mean (3.93) associated with participants recommending these services to others, reflecting their effectiveness in improving engagement. Conversely, the lowest mean (3.68) reflected the impact of personalized services on fostering engagement with the organization, highlighting the need to strengthen individual connections. Overall, the findings underscore the significant role of AI-driven personalized services in enhancing consumer engagement and loyalty, while identifying opportunities to improve interaction and maximize their impact.

3.7.11. Hypothesis Testing and Discussion

H1: There is a statistically significant relationship between the adoption of AI-driven personalization and consumer engagement in Saudi Arabia.

Table 11. Hypothesis 1 Testing

Measure	Beta Coefficient (β)	Significance (p-value)	Mean	Std.Dev
Adoption of AI-driven Personalization	0.35	<0.01	3.89	0.66

Source: own study

Hypothesis Accepted: The results of Table 11 indicate a statistically significant relationship between the adoption of AI-driven personalization and consumer engagement in Saudi Arabia. The beta coefficient ($\beta = 0.35$) and p-value ($p < 0.01$) demonstrate a positive relationship between the variables. The mean score (3.89) and low standard deviation (0.66) reflect a high level of agreement among participants, supporting the conclusion that adopting AI-driven personalization positively impacts consumer engagement.

H1: There is a statistically significant relationship between technological readiness for adopting AI and consumer engagement in Saudi Arabia.

Table 12. Hypothesis 2 Testing

Measure	Beta Coefficient (β)	Significance (p-value)	Mean	Std.Dev
technological readiness for adopting AI	0.28	<0.05	3.82	0.68

Source: own study

Hypothesis Accepted: The results of Table 12 indicate a statistically significant relationship between technological readiness for adopting AI and consumer engagement in Saudi Arabia. This is supported by the beta coefficient ($\beta = 0.28$) and the significance level ($p < 0.05$), confirming the importance of the relationship between these variables. Additionally, the mean score (3.82) and standard deviation (0.68) reflect a moderate effect, emphasizing that technological readiness for adopting AI positively contributes to enhancing consumer engagement.

H1: There is a statistically significant relationship between organizational culture associated with AI and consumer engagement in Saudi Arabia.

Table 13. Hypothesis 3 Testing

Measure	Beta Coefficient (β)	Significance (p-value)	Mean	Std.Dev
Organizational Culture associated with AI	0.32	<0.01	3.88	0.61

Source: own study

Hypothesis Accepted: The results in Table 13 indicate a statistically significant relationship between organizational culture associated with AI and consumer engagement in Saudi Arabia. The beta coefficient ($\beta = 0.32$) and p-value ($p < 0.01$) demonstrate a positive relationship between the variables. Additionally, the mean score (3.88) with a low standard deviation (0.61) supports this relationship, suggesting that consumers recognize the importance of AI-driven organizational culture in enhancing their engagement with companies.

H1: There is a statistically significant relationship between ethical considerations related to AI, such as data privacy and transparency, and consumer engagement in Saudi Arabia.

Table 14. Hypothesis 4 Testing

Measure	Beta Coefficient (β)	Significance (p-value)	Mean	Std.Dev
Ethical considerations related to AI	0.40	<0.01	3.89	0.65

Source: own study

Hypothesis Accepted: The results of Table 14 indicate a statistically significant relationship between ethical considerations related to AI, such as data privacy and transparency, and consumer engagement in Saudi Arabia. The beta coefficient ($\beta = 0.40$) and the significance level ($p < 0.01$) demonstrate a strong effect of this relationship. Furthermore, the mean score (3.89) and standard deviation (0.65) reflect a positive perception of these ethical considerations and their impact on consumer engagement.

H1: There is a statistically significant relationship between the cost of adopting AI-driven personalization and consumer engagement in Saudi Arabia.

Table 15. Hypothesis 5 Testing

Measure	Beta Coefficient (β)	Significance (p-value)	Mean	Std.Dev
cost of adopting	0.40	<0.01	3.89	0.65

Source: own study

Hypothesis accepted the results of Table 15 indicate a statistically significant relationship between the cost of implementing AI-driven personalization and consumer engagement in Saudi Arabia. This is supported by the beta coefficient ($\beta = 0.25$) and the p-value ($p < 0.05$), confirming that the relationship between these variables is not random. Additionally, the mean score (3.88) and standard deviation (0.59) reflect a positive agreement among participants regarding the impact of the cost of implementing AI-driven personalization on their engagement as consumers.

4. Results

The findings of this study emphasize the pivotal role of AI-driven personalization in significantly enhancing customer engagement. By delivering tailored experiences that align with the individual needs and preferences of consumers, AI technologies have demonstrated their potential to boost customer satisfaction and strengthen emotional connections with brands. This emotional bond fosters loyalty and positions AI as a cornerstone in building sustainable consumer relationships. The adoption of AI-driven personalization effectively addresses modern consumer demands for convenience, efficiency, and value, as reflected in the high satisfaction levels observed across the study. The readiness of organizations to integrate AI technologies emerged as a critical factor influencing the success of AI-driven personalization. Organizations investing in advanced technological infrastructure and innovative AI solutions have created seamless and efficient customer experiences. This readiness has enabled businesses to better understand and respond to customer needs, fostering stronger engagement. Moreover, the proactive use of AI tools to provide accurate recommendations and personalized services has made interactions more accessible, reinforcing the value of AI in improving service quality.

An organization's culture was identified as another key determinant of consumer engagement. Companies prioritizing innovation and effectively integrating AI into practices create a culture that fosters trust, credibility, and deeper consumer connections. Participants highlighted the importance of transparency, professionalism, and social responsibility in AI adoption. This alignment of organizational culture with AI implementation has been instrumental in building trust and loyalty among customers, making them more inclined to engage with the brand.

Ethical considerations, particularly regarding data privacy and transparency, played a significant role in shaping consumer perceptions and behaviors. Customers expressed concern about how their data is used in AI-driven personalization. The findings revealed that when companies prioritize data security, seek explicit consent for usage, and ensure transparent communication, they build trust among customers. These practices drive engagement by addressing ethical concerns and enhancing the perceived value of personalized experiences.

The study also demonstrated that the cost of implementing AI-driven personalization is viewed as reasonable by consumers. Customers recognize the practical benefits of AI technologies, such as time-saving, convenience, and enhanced experiences, outweighing the perceived costs. Participants expressed willingness to pay for AI-personalized products and services if they deliver tangible value and superior experiences. This balance between cost and value highlights the importance of strategic pricing in driving adoption and satisfaction.

5. Discussion

This study's findings highlight the prominent influence of organizational culture and ethical AI adoption, providing a solid theoretical basis for understanding and interpreting the data. The evident impact of AI-driven personalization on consumer engagement demonstrates how tailored interactions effectively enhance satisfaction and loyalty. This aligns with a behavioral model suggesting that personalized stimuli, such as AI-based solutions, positively affect consumer responses, including engagement, trust, and loyalty. Furthermore, the demographic diversity of the sample underscores inclusivity, allowing the results to be generalized across various consumer segments. It also illustrates how factors such as age, education, and income contribute to shaping and understanding the adoption of AI-powered technologies. Moreover, statistical analyses reveal a strong relationship between ethical considerations and the level of consumer engagement, underscoring the importance of practices like data privacy and transparency in fostering trust and maintaining long-term customer relationships. The role of organizational culture in consumer engagement further demonstrates how innovation-oriented environments enhance trust and satisfaction by prioritizing transparency, professionalism, and social responsibility. In addition, the positive perception of costs associated with AI-driven personalization indicates consumers' readiness to pay a premium for improved experiences, while also revealing opportunities for cost optimization aligned with the notion of consumers evaluating value relative to price. Overall, these insights offer a comprehensive framework enabling organizations to refine their AI strategies, reinforce trust, and build sustainable consumer-brand relationships through innovative and ethical practices. Furthermore, integrating

advanced analytics and generative AI tools can deepen personalization strategies by uncovering subtle behavioral patterns, although caution is warranted to address potential algorithmic biases that may negatively affect trust, brand credibility, and adoption rates.

6. Conclusion

This study underscores the transformative potential of AI-driven personalization in enhancing customer engagement, satisfaction, and loyalty. By delivering tailored experiences that align with individual preferences, AI technologies empower organizations to foster deeper emotional connections with consumers, strengthening long-term relationships. The findings demonstrate that AI-driven personalization is not merely a technological advancement but a strategic tool for driving competitive advantage in the digital economy. The research highlights the critical role of technological readiness in implementing AI-driven solutions. Organizations investing in advanced infrastructure and workforce development are better equipped to leverage AI capabilities, enabling seamless interactions with consumers. Moreover, the alignment of organizational culture with AI adoption emerged as a significant factor, as companies prioritizing transparency, innovation, and professionalism foster trust and loyalty. Ethical considerations, particularly data privacy and transparency, were identified as influential factors in shaping consumer perceptions. The study emphasizes that organizations must prioritize explicit consent, transparent communication, and robust data security measures to build trust and ensure ethical AI use. These practices are essential for addressing customer concerns and establishing credibility in the marketplace. Cost considerations also play a pivotal role in consumer adoption of AI-driven personalization. While customers generally perceive these costs as reasonable, findings suggest that organizations can optimize pricing strategies to maximize accessibility and engagement. Consumers are willing to invest in personalized experiences delivering tangible benefits, highlighting the need to balance cost with value. In conclusion, the study provides a framework for understanding the factors influencing the adoption and effectiveness of AI-driven personalization in customer engagement. By addressing technological readiness, organizational culture, ethical considerations, and cost, this research contributes valuable insights on AI in digital marketing. The results emphasize adopting consumer-centric strategies aligning with ethical principles, fostering trust, and delivering value. Organizations effectively integrating AI-driven personalization are well-positioned to thrive in an increasingly competitive and technology-driven market. Future research could explore the long-term impacts of AI adoption across industries and demographics, providing further insights into optimizing AI for enhanced consumer engagement.

6.1. Study Limitations

Despite the positive aspects highlighted by the study's findings, several limitations should be considered when interpreting the results. First, the study focused on a limited sample of users of AI-assisted personalization in Saudi Arabia, which may restrict the generalizability of the findings to broader geographic or cultural contexts. Second, the research relied heavily on participants' self-reported responses through questionnaires, introducing the possibility of personal bias or inaccuracies in survey completion. Furthermore, the study did not examine the influence of external factors, such as economic variables or legislative developments, which could also affect the adoption of intelligent technologies.

6.2. Recommendation and Future Study

The study highlights the necessity of bolstering consumer trust through transparency and data management by establishing clear privacy policies and rigorous governance mechanisms ensuring transparent customer consent, thereby strengthening brand credibility. Furthermore, the success of AI-driven personalization requires investment in technological readiness and workforce development, achieved through advanced infrastructure and targeted training programs. This approach enhances system effectiveness and delivers more personalized experiences to consumers. Successfully integrating intelligent solutions in the workplace calls for cultivating an innovative organizational culture grounded in creativity and social responsibility, fostering communication and collaboration across departments, ultimately increasing acceptance of smart technologies and elevating service value. Revisiting pricing strategies through flexible models that balance perceived consumer value with profitability is advisable; the study indicates consumers are willing to pay extra if services exceed expectations. Finally, instituting clear regulatory frameworks to protect consumer privacy and enhance public trust requires coordinated efforts between governmental entities and organizations to ensure responsible innovation and uphold transparency.

For future study, broadening the scope to include larger and more diverse samples recommended to test the generalizability of findings. Incorporating additional variables – such as brand image and trust in algorithms – while considering cultural and economic factors in consumer behavior could yield richer insights. Combining quantitative and qualitative methods, such as surveys and in-depth interviews, may uncover psychological drivers underlying AI acceptance or rejection. Longitudinal studies also recommended monitoring shifts in consumer attitudes alongside technological or legislative developments. Researchers could utilize data analytics and generative AI tools to investigate usage patterns and loyalty indicators, emphasizing synergy between

government policies and organizational strategies to foster a sustainable marketing environment.

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